

Simulation

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الدراس

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خاصة [3]

Stock Flow Diagram

- * Any system is a collection of stocks that interact through flows.
- * Flow has a flow rate.
- * When you stop time, stock continue but flow stops.

- Anything that Accumulates is an integration

- types of stocks:-

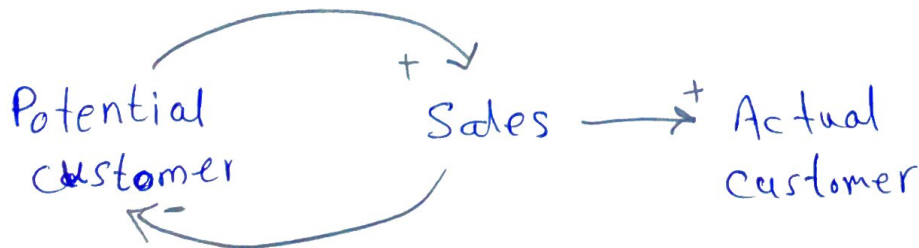
- ① material
- ② Personal
- ③ Capital Equipments
- ④ information
- ⑤ order

- Auxiliary variables are from outside the system and affect the system.

stock flow consists of:

- ① Stock
- ② flow
- ③ Auxiliary variables

causal loop Diagram of potential customers



The loop is an "S" shaped behavior

for the previous example :-

$$\text{Actual customer} = \int_0^t \text{sales}(\tau) dt$$

$$\text{Potential customer} = \text{Initial State} - \int_0^t \text{sales}(\tau) dt$$

* Performance is the output of simulation.

* a stock can't be negative.

* a state space model, the state variables are the flow

* a flow cannot be negative